Introduction to Infrastructural Engineering

Building Structure2

by
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Classification of Concrete Mixes

Slump Test Apparatus

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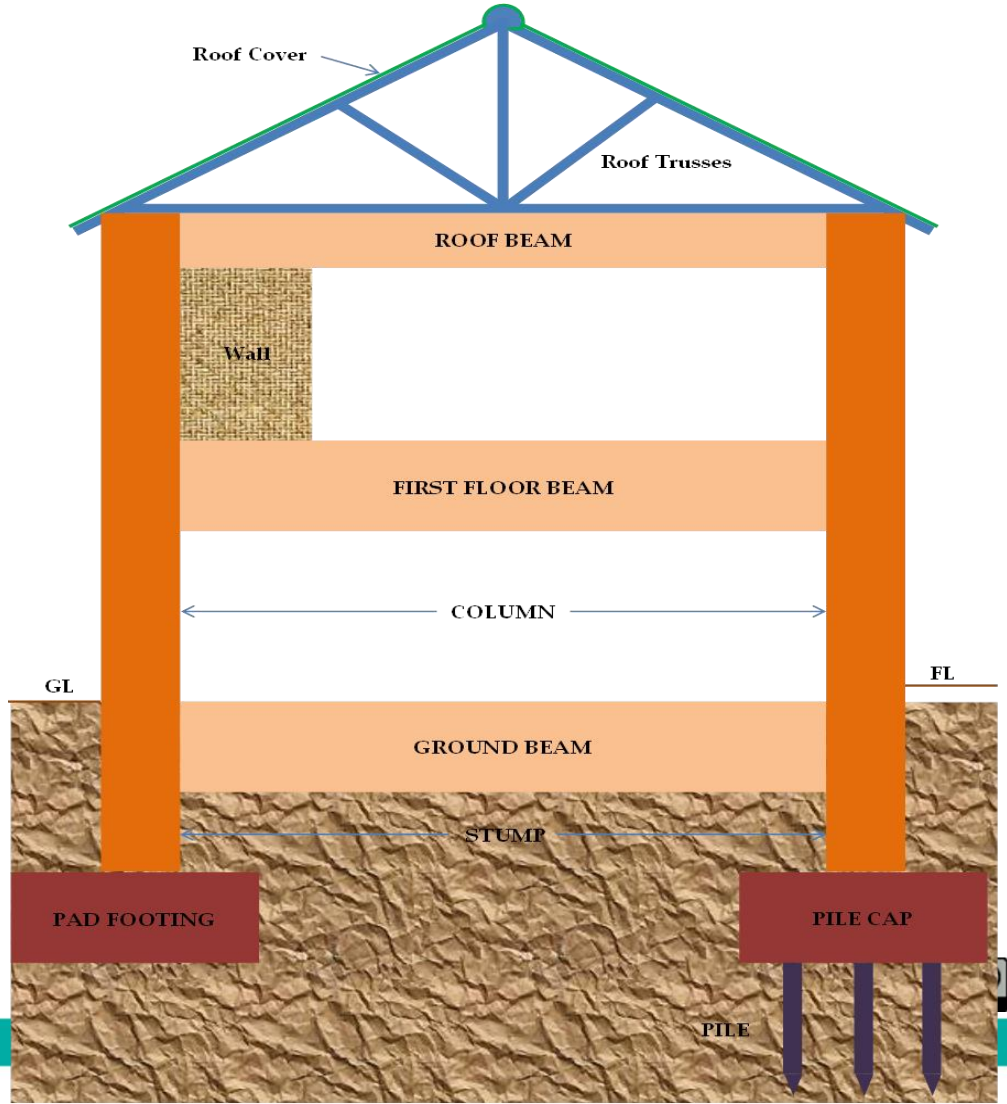
Slump Test

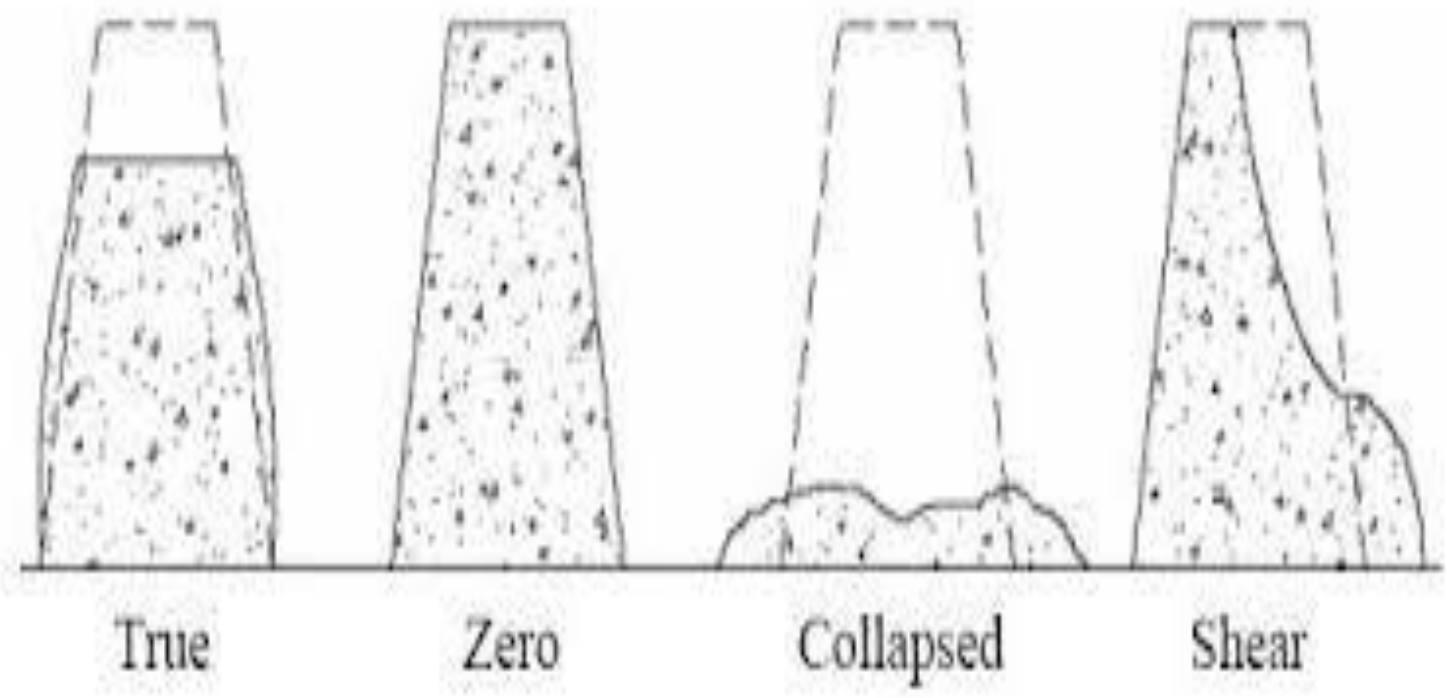
BY NC SA

r. MD Nurul Islam

Typical RC Building Structure



Slump Test



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Reinforced Concrete

ii. Concrete Grade

- The numerical value of the characteristic strength at 28 days in N/mm2
- Compressive Strength

Grade of Concrete	28-day Strength (N/mm²)	Cube Strength at 7 Days (N/mm²)	Average Cube Strength at 28 Days (N/mm²)
20	20.0	14	20.0
25	25.0	17	25.0
30	30.0	20	30.0
40	40.0	27	40.0

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Classification of Concrete Mixes

Characteristic Strength of Steel Reinforcement

Type	Nominal Sizes (mm)	Specified Characteristic Strength, fy (N/mm2)
Hot rolled grade 250	All sizes	250
Hot rolled grade 460	All sizes	460
Cold worked	All sizes	460
Hard drawn steel wire	Up to and including 12	485

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Grade of Concrete and Mixed

Grade of Concrete	Cement/Sand/Aggregate Ratio
15	1 : 3 : 6
20	1 : 2 : 4
25	1 : 1.5 : 3
30	1 : 1 : 2

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Quiz

Calculation of required materials for 1m3 concrete, where the mixing proportion is 1:2:4.

Solution:

Dry volume= 1 x 1.45 = 1.45 (increase in dry volume of concrete is considered to be 45%)

Cement= 1.45/(1+2+4)=0.207m3 x 1470(density of cement) =304.29 kg

Sand=(1.45 x 2)/(1+2+4)=0.414m3 x 1350(density of sand) =558.9 kg

Coarse Aggregate=(1.45 x 4)/(1+2+4)=0.828m3 x 1300(density of aggregate)=1076.4 kg

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